

In the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1.-7. (Canceled)
8. (Previously Presented) A method of mixing chemicals comprising:
flowing a chemical into a valve system having a tube of a known volume;
filling said tube with said chemical, wherein filling said tube generates a measured amount of said chemical approximately equal to the known volume of the tube;
flowing DI water into a first conduit and into a second conduit, wherein said DI water in said first conduit flows into said tube to push said measured amount of chemical into a third conduit;
combining the flow of said measured amount of chemical and said DI water in said third conduit with said flow of DI water in said second conduit; and dispensing said combined flow onto a spinning wafer.
9. (Original) The method claim 8, wherein said valve system comprises a 6-port valve.
10. (Original) The method of claim 8, wherein said valve system comprises two 3-port valves.
11. (Previously Presented) A method of mixing chemicals comprising:

flowing a chemical into a first valve system having a first tube of a known volume and filling said first tube with said chemical to generate a measured amount of said chemical;

flowing DI water into a second valve system having a second tube of a known volume and filling said second tube with said DI water to generate a measured amount of said DI water; and

flowing an inert gas into said first and second valve systems to push said measured amount of said chemical and said measured amount of said DI water into a chamber where said measured amount of chemical and said measured amount of DI water are mixed together.

12. (Original) The method of claim 11, wherein said first and said second valve systems each comprise a 6-port valve.

13. (Original) The method of claim 11, wherein said first and second valve systems each comprise two 3-port valves.

14. – 17. (Canceled)

18. (Previously Presented) The method of claim 11, wherein said first and second valve systems comprise a combination of a 6-port valve and two 3-port valves.

19. (Amended) A method of generating a measured amount of a chemical in a single semiconductor wafer etching or cleaning process:

flowing a chemical into a valve system having a tube of a known volume;

filling said tube with said known volume with said chemical, wherein filling said tube generates a measured amount of said chemical approximately equal to the known volume of the tube; and

applying only said measured amount of said chemical to a semiconductor wafer in a single semiconductor wafer etching or cleaning process;

wherein the measured amount of chemicals is applied by pushing the chemicals out of the tube with a flushing fluid, selected from a group consisting of a measured amount of DI water and an inert gas; and

wherein the applied chemical mixture is of a known measured concentration.

20. (Previously Presented) The method of claim 19, wherein said valve system comprises a 6-port valve.

21. (Previously Presented) The method of claim 19, wherein said valve system comprises two 3-port valves.

22. (Amended) The method of claim 19, further comprising the step of changing wherein the means to change the amount of chemical used is performed by changing the volume of the measuring said tube.

23. (Amended) A method of generating a measured amount of a chemical in a single semiconductor wafer process:

flowing a chemical into a valve system having a tube of a known volume; ;

filling said tube with said known volume with said chemical, wherein filling said tube generates a measured amount of said chemical approximately equal to the known volume of the tube; and

applying only said measured amount of said chemical to a semiconductor wafer in a single semiconductor wafer process, wherein the said valve system changes from a charging mode of the chemical to a discharging mode of the resulting measured chemical by performing a single change of state of a single multiport valve;

wherein the measured amount of chemicals is applied by pushing the chemicals out of the tube with a flushing fluid, selected from a group consisting of a measured amount of DI water and an inert gas; and

wherein the applied chemical mixture is of a known measured concentration.

24. (Previously Presented) The method of claim 23, wherein the said valve system changes from a discharging mode of the resulting measured chemical to the charging mode of the chemical by performing another single change of state of the single multiport valve.

25. (Amended) The method of claim 23, further comprising the steps of changing wherein the means to change the amount of chemical used is performed by changing the volume of the measuring said tube.

26. (Amended) A method of mixing chemicals comprising:
flowing a first chemical into a valve system having a tube of a known volume;

filling said tube with said first chemical, wherein filling said tube generates a measured amount of said first chemical approximately equal to the known volume of the tube;

flowing a second chemical into said valve system to push only said measured amount of said first chemical into a chamber with said second chemical; and

continuing to flow said second chemical into said chamber until a predetermined level is reached in said chamber to form a mixed solution of a known measured concentration.

27. (Previously Presented) The method of claim 26, wherein the second chemical is DI water.

28. (Amended) The method of claim 26, further comprising the steps of changing wherein the means to change the amount of chemical used is performed by changing the volume of the measuring said tube.

29. (Previously Presented) The method of claim 26, further comprising dispensing said mixed solution onto a single spinning wafer by pressurizing said chamber.

30. (Previously Presented) The method of claim 26, wherein said valve system comprises a 6-port valve.

31. (Previously Presented) The method of claim 26, wherein said valve system comprises two 3-port valves.

32. (Amended) A method of mixing chemicals comprising:

flowing a first chemical into a first valve system having a first tube of a known volume and completely filling said first tube with said first chemical to generate a measured amount of said first chemical;

flowing a second chemical into a second valve system having a second tube of a known volume and completely filling said second tube with said second chemical to generate a measured amount of said second chemical; and

flowing a first and second flushing fluid into said first and second valve systems, respectively, to discharge only said measured amount of said first chemical into a first exhaust unit and only said measured amount of said second chemical into a second exhaust unit, wherein only said measured amount of first chemical and only said measured amount of second chemical are mixed together; and

wherein, at least one of said first and second flushing fluids have an approximately know volume.

33. (Previously Presented) The method of claim 32, wherein said first and second exhaust units comprise a single reservoir.

34. (Previously Presented) The method of claim 32, wherein the first flushing fluids are selected from a group consisting of the said second chemical, the said second flushing fluid, DI water, and an inert gas.

35. (Previously Presented) The method of claim 34, wherein the second flushing fluids are selected from a group consisting of the said first chemical, the said first flushing fluid, DI water, and an inert gas.

36. (Previously Presented) The method of claim 32, wherein said first and said second valve systems each comprise a 6-port valve.

37. (Previously Presented) The method of claim 32, wherein said first and second valve systems each comprise two 3-port valves.

38. (Previously Presented) The method of claim 32, wherein said first and second valve systems comprise a combination of a 6-port valve and two 3-port valves.

39. (Previously Presented) A method of mixing chemicals comprising:
flowing a first chemical into a valve system having a first tube of a known volume and completely filling said first tube with said first chemical to generate a measured amount of said first chemical;
flowing a second chemical through a flow control valve and split into both the valve system and into a first control valve, wherein the second chemical pushes said measured amount of said first chemical, from the valve system, to generate a first chemical mixture, that feeds into a second control valve; and
mixing said first chemical mixture from the second control valve and said second chemical from the said first control valve.

40. (Previously Presented) The method of claim 39, wherein said valve system comprises a 6-port valve.

41. (Previously Presented) The method of claim 39, wherein said valve system comprise two 3-port valves.

42. (Previously Presented) The method of claim 39, wherein the said second chemical comprises DI water.